BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Engineering (optional unit) Pearson BTEC International Level 3 Diploma in Mechanical Engineering (optional unit) Pearson BTEC International Level 3 Diploma in Aeronautical Engineering (optional unit) Pearson BTEC International Level 3 Extended Diploma in Engineering (optional unit) Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering (optional unit) Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering (optional unit) Pearson BTEC International Level 3 Extended Diploma in Aeronautical Engineering (optional unit)
Unit number and title	**Unit 29: Principles and Applications of Fluid Mechanics**
Learning aim(s)	**B:** Explore the application of dynamic fluid principles to internal fluid flows and measurement systems
Assignment title	2 Internal fluid flows and measurement systems
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have successfully completed part of an apprenticeship with a company that supplies components and equipment for pneumatic, hydraulic and propulsion devices and systems. Your current placement in the company is with the Design Department. The Department is responsible for designing bespoke solutions for customers as well as standard components and systems. You have been working with a Senior Design Engineer who has identified some knowledge and skills that you need to develop before you can understand customer requirements and apply them to the selection of components and incorporating them into systems.
Task 1	You have been asked to investigate fluid flows and internal fluid flow measuring instruments and associated piped systems and how they can be applied in mechanical systems. **To do this:** You will carry out practical activities safely, in accordance

	with relevant risk assessments. You need to produce a report that includes detail of the investigations carried out, including comparisons between measured values and those predicted by theory. You need to use the available apparatus, to carry out practical investigations and record the results systematically for flow through a piped system including a tapered pipe using appropriate instruments to measure pressure and flow rate. You will need to include two measuring systems, including Venturi apparatus/meter. You should then: Outline in your report the relevant theory for each investigations and compare your measured results with those predicted by theory. You should consider pressure and fluid flow parameters, and changes in behaviour of water as it passes through a Venturi meter.
Checklist of evidence required	A portfolio of results gathered by experimentation when investigating fluid flows and internal fluid flow measuring instruments and associated piped systems and by theoretical calculation, supported by • images, • observation records • mathematical modelling • calculations • evaluations and • conclusions

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
29/B.D2	Evaluate the behaviour and parameters of at least one tapered pipe and at least two measuring instrument fluid systems, comparing the results from safely and accurately conducted experiments against theoretical calculations.
29/B.M3	Conduct experiments safely and accurately to determine the behaviour and parameters of at least one tapered pipe and at least two measurement instrument fluid systems.
29/B.M4	Analyse, using the results and theoretical calculations, the behaviour and parameters of fluids in at least one tapered pipe and at least two measuring instrument fluid systems.
29/B.P3	Conduct experiments safely to determine the behaviour and parameters of at least one tapered pipe fluid system.
29/B.P4	Conduct experiments safely to determine the behaviour and parameters of two measurement instrument fluid systems.
29/B.P5	Explain, using the results and theoretical calculations, the behaviour and parameters of fluids in at least one tapered pipe and at least two measurement instrument fluid systems.

Sources of information to	Books BTEC Level 3 National Engineering Student Book (Level 3

support you with this Assignment	BTEC National Engineering); Buckenham et al; Pearson Education (2010); **ISBN-13:** 978-1292141008 Mechanical Engineering; Darbyshire A; Routledge (2010); ISBN-13: 978-0080965772 Mechanical Engineering Principles; Bird, Ross; Routledge (2014); **ISBN-13:** 978-1138781573 Websites miniphysics.com/a-level-physics-revision-notes-junior-college-physicsh1-h2.html freestudy.co.uk Above are some examples of websites. Further useful resources may be found at qualifications.pearson.com/en/support/published-resources.html#step1
Other assessment materials attached to this Assignment Brief	Practical instructions for the apparatus used to carry out each of the required practical investigations.